

Work Order ID 50721

July 21, 2009 12:37:56 PM

Page 1

Item ID: D3691-1

Revision ID: U/R

Item Name: STUD

Start Date: 7/15/09

Start Qty: 12.00

Required Date: 7/15/09

Req'd Qty: 12.00

Reference:

Approvals:

Process Plan: *W*

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D3691

Rev U/R

100

0.00



BAND SAW

Bandsaw

Memo

0.00

Jeaspa Bandsaw

DO NOT USE CHOP SAW

SA 09/07/28
Cut blank 7.850" long

30 *0*

110

0.00



DOOSAN LATHE

Doosan

Memo

0.00

Doosan Lathe

I-Turn as per Folio FA716 Rev: *W/A* & Dwg D3691 Rev: *B* 12-Deburr
per dwg D3691

SA 09/07/28

30 *0*

120

0.00



QC2- Inspect parts off machine FAI/FAIB

QC

Memo

0.00

Quality Control

SA 09/07/28

30 *0*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 50721

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Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130



Lathe Conv

Conventional Lathe

CONVENTIONAL LATHE

Memo

Face to finished length as per dwg D3691 AND center drill as per Dwg D3691

0.00

0.00

0.00

0.00

0.00

0.00

140



QC

Quality Control

QC2- Inspect parts off machine FAI/FAIB

Memo

150



Doosan

Doosan Lathe

DOOSAN LATHE

Memo

1- Turn as per Folio FA716 Rev: 17/A & Dwg D3691 Rev: B □2-Deburr per dwg D3691

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 50721

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Item ID: D3691-1

Accept



Setup Start



Revision ID: U/R

Stop



Item Name: STUD

Start Date: 7/15/09

Start Qty: 12.00



Cust Item ID:

Required Date: 7/15/09

Req'd Qty: 12.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

Quality Control

SA / 09.07.30

30

170

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

ml 09/08/04

30

180

Identify as per dwg & Stock Location: 120

0.00



Packaging

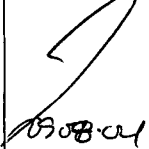

Memo

0.00

Packaging

09/08/04 (H) (P70)



W/O: 50721		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
05-08-04	180	W/O is missing - P/O issue for LPI - LPI / NDT testing per chg. - Receiving to attach C.O.C. - QC 5 inspections Add to W/O perm change	MA	09/08/04		 05-08-04	 05-08-04

Part No: D3691-1 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 50721

August 10, 2009 8:22:43 AM

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Item ID: D3691-1

Accept

Revision ID: U/R

Item Name: STUD

Start Date: 7/15/09

Start Qty: 12.00

Required Date: 7/15/09

Req'd Qty: 12.00

Cust Item ID:

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160



QC

Quality Control

QC2- Inspect parts off machine FAI/FAIB

Memo

0.00

0.00

170



QC

Quality Control

QC8- Inspect parts - second check

Memo

0.00

0.00

210



Purchasing

Purchasing

Memo

Issue P/O:

2L Certificate of conformaty is required

0.00

0.00

1LPI Per ASTM 1417 LEVEL

CZ 09/08/11 30

CZ 09/08/12

Work Order ID 50721

August 10, 2009 8:22:43 AM



Item ID: D3691-1

Accept



Setup Start



Revision ID: U/R

Stop



Item Name: STUD

Start Date: 7/15/09 Start Qty: 12.00



Cust Item ID:

Required Date: 7/15/09 Req'd Qty: 12.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

220

0.00



Packaging

Memo

0.00

Packaging

Ensure certificate of conformity is attached

CL 09/08/11 30

230

0.00



QC

Memo

0.00

Quality Control

See w/o change

240

0.00



Packaging

Identify as per dwg & Stock Location: _____

Memo

0.00

Packaging

QC 5 ml

ml 09.08.11 30

Work Order ID 50721

August 10, 2009 8:22:43 AM



Page 5

Item ID: D3691-1

Accept



Setup Start



Revision ID: U/R

Stop



Item Name: STUD

Start Date: 7/15/09

Start Qty: 12.00



Cust Item ID:

Required Date: 7/15/09

Req'd Qty: 12.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

250

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

09108124

MF 09-08-20

Picklist Print

July 21, 2009 12:37:56 PM

Page 1

Work Order ID: 50721

Parent Item: D3691-1RevU/R

Parent Item Name: STUD

Comments:

Start Date: 7/15/09

Required Date: 7/15/09

Start Qty: 12.00

Required Qty: 12.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
M174PH-H900R1.000		Purchased	No				f	64.5000	8.7644			

17-4SS H900 ROUND BAR 1.00

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
MAT	64.5	
110213	3.3	
110750	24.99	
110990	11.87	
111055	24.34	

10.44
10.54
09/07/28

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	50721
Description: Std		Part Number:	A3691-1
Inspection Dwg: 3691 Rev: 13		Page 1 of 1	

FIRST ARTICLE INSPECTION CHECKLIST

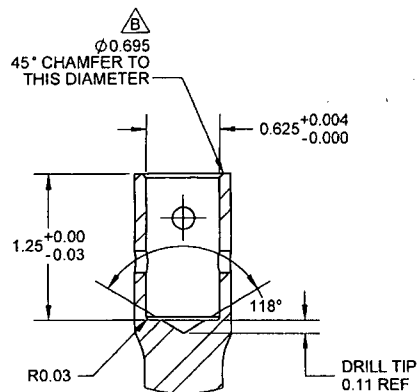
☒ First Article
 ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø.695	±.010 ±.010	Ø.695 .700	/			
Ø.625	+ .004 - .000	Ø.629	/			
1.25	+ .000 - .03	1.238	/			
Ø.825	+ .006 - .001	Ø.827	/			
Ø.189	+ .003 - .001	Ø.189	/			
.750	+ .000 - .010	.743	/			
1.31	± .030	1.310	/			
1.65	± .030	1.65	/			
Ø.659	+ .000 - .015	Ø.651	/			
7.750	± .015	7.755	/			
2.90	± .030	2.915	/			
.375	+ .000 - .010	.368	/			
R.25	± .030	R.25	/			
R.50	± .030	R.50	/			
Major Ø	Max. .7485 Min. .7391	.7465	/			
M.O.W.	Max. .7487 Min. .7687	.7429	/			

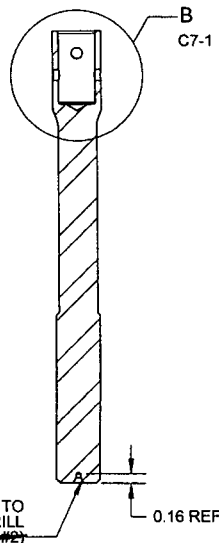
Measured by: SA	Audited by: JML	Prototype Approval:	N/A
Date: 09/07/28	Date: 09/08/04	Date:	N/A

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	

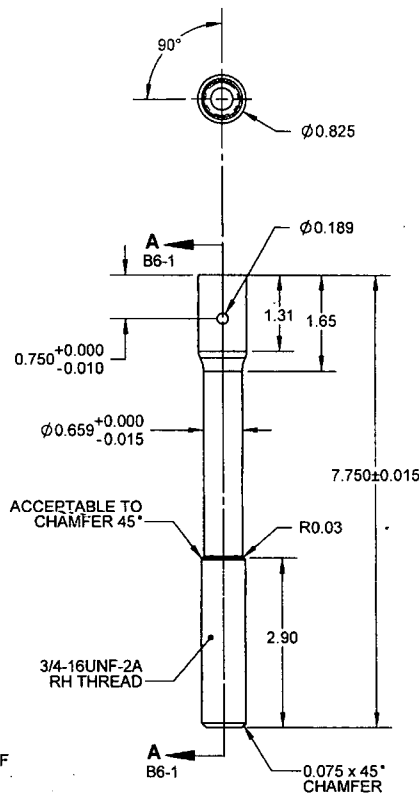
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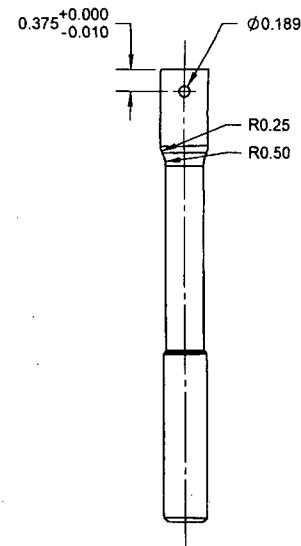
DETAIL B
SCALE 2X
C6-1



SECTION A-A
D4-1



D3691-1 STUD



UNDER REVIEW
08/23/10
CHANGING CENTER DRILL
TO #4

RELEASED
08/12/15

- NOTES:**
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: NONE
 - 7) WEIGHT: 0.81 lb
 - 8) LPI PER ASTM 1417 LEVEL 2

*Just #4
See E-DAT
ATTACHED*

W/ 80721

B	CHANGE TO 17-4PH H-900(ZN A8-1); 0.695 WAS 0.665 (ZN D8-1); REFORMATTED TO CURRENT DWG STANDARDS	RF	08.11.24
A	NEW ISSUE	RF	08.03.12
REV.	DESCRIPTION	BY	DATE
DESIGN	RF		
DRAWN	RF		
CHECKED	<i>[Signature]</i>		
MFG. APPR.	<i>[Signature]</i>		
APPROVED	<i>[Signature]</i>		
DE APPR.	<i>[Signature]</i>		
DATE	08.11.24		

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D3691
TITLE STUD
REV. B
SHEET 1 OF 1
SCALE NTS

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Jean-Luc Menard

From: David Shepherd [dshepherd@dartaero.com]
Sent: March 9, 2009 12:48 PM
To: 'Jean-Luc Menard'
Cc: 'Mike Petsche'; 'Roberto Fuentes (Roberto Fuentes)'
Subject: RE: engine mount studs D3691 & D3688

JL,

As discussed, it is acceptable to change from a #2 center drill to a #4 center drill on current production of the D3691 & D3688 engine mount studs. Please consider this email acceptance of this deviation.

Roberto,

Please work with Kim to put D3691 and D3688 Under Review. Then, please update drawings D3691 and D3688 for future production over the next month or so.

Thanks,
David

-----Original Message-----

From: Jean-Luc Menard [mailto:jmenard@dartaero.com]
Sent: Monday, March 09, 2009 9:44 AM
To: David Shepherd (David Shepherd)
Cc: Mike Petsche; Roberto Fuentes (Roberto Fuentes)
Subject: engine mount studs D3691 & D3688

David,

As dicussed, we would change the center drill in the parts to #4 from #2.

This would result in better support in the lathe resulting in better surface finish.

This is fine for these parts, what did you want to do for future parts?

Let me know.

JLM

Jean-Luc Menard

Production Engineering Coordinator

1270 Aberdeen Street

Hawkesbury Ontario

Canada K6A 1K7

Tel: (613) 632-5200 Ext 227

<mailto:jmenard@dartaero.com> jmenard@dartaero.com



LIQUID PENETRANT TEST REPORT

P- 14945

CLIENT	<u>DART Aerospace</u>	DATE	<u>Aug-10-2009</u>	PAGE	<u>1</u>	OF	<u>1</u>
ATTENTION	<u>LINDA CHANTAL</u>	ACUREN JOB NO.	<u>188-09-001484</u>	TIME	AM <input checked="" type="checkbox"/>	PM <input type="checkbox"/>	
ADDRESS	<u>1270 ABERDEEN ST.</u>	PO/NO No.	<u>10205</u>				
	<u>HAWKESBURY ON. K6H-1K7</u>	WORK LOCATION	<u>HAWKESBURY</u>				
PROJECT	<u>F.P.I. ON MACHINED PARTS - AND CROSS TUBES</u>	ACCEPTANCE STD.	<u>ASTM 1417</u>	REV./DATE	<u>2007</u>		
ITEM(S) EXAMINED	<u>44 STUDS. 20 RAPPERS</u>						
	<u>7 CROSS TUBES. + 12 STUDS.</u>						

JOB DESCRIPTION	PROCEDURE NO. <u>LT-0002</u>	REV./DATE	TECHNIQUE NO. <u>LT-TECH-2</u>	REV./DATE
PART NO.	MATERIAL <u>STAINLESS STEEL</u>	THICKNESS	<u>ALUMINE ALUMINUM</u>	
SCOPE	<u>WET FLUORESCENT LIQUID PENETRANT INSPECTION</u>			
	<u>CARRIED OUT 100% EXTERNAL</u>			

TEST DETAILS	
METHOD <input checked="" type="checkbox"/> FLUORESCENT <input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH <input type="checkbox"/> SOLVENT REMOVABLE <input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND <u>MAGNAFLUX</u>	BLACK LIGHT S/N <u>16459</u> <input checked="" type="checkbox"/> OUTPUT > 1000 μ W/cm ² <input type="checkbox"/> AMBIENT < 2 fc
PENETRANT <u>2L 67</u> MINIMUM DWELL TIME <u>45</u> MIN.	LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE
PENETRANT REMOVER <u>H2O</u> MINIMUM DRY TIME <u>>10</u> MIN.	OTHER <u>LABINO</u>
DEVELOPER <u>SKD 52</u> MINIMUM DWELL TIME <u>10</u> MIN.	LIGHT METER S/N
DEVELOPER TYPE <input checked="" type="checkbox"/> NON AQUEOUS <input type="checkbox"/> AQUEOUS <input type="checkbox"/> DRY	CAL DUE DATE <u>DEC 8 - 2009</u>

TEST SURFACE	
SURFACE CONDITION <input type="checkbox"/> AS GROUND <input type="checkbox"/> AS WELDED <input type="checkbox"/> MACHINED <input type="checkbox"/> SHOT BLASTED <input type="checkbox"/> CLEAN BARE METAL	
SURFACE TEMPERATURE <input type="checkbox"/> < -4°C/ 20°F <input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F <input type="checkbox"/> 10°C/50°F TO 52°C/125°F <input type="checkbox"/> > 52°C/125°F	

RESULTS- <input type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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PCS STUDS - W.O.</td><td>509</td><td>33</td><td>✓</td><td></td></tr><tr><td>30 PCS STUDS - W.O.</td><td>507</td><td>21</td><td>✓</td><td>24 x 0</td></tr><tr><td>12 PCS STUDS - W.O.</td><td>509</td><td>32</td><td>✓</td><td></td></tr><tr><td>10 PCS RAPPET - W.O.</td><td>509</td><td>67</td><td>✓</td><td></td></tr><tr><td>10 PCS RAPPET - W.O.</td><td>509</td><td>68</td><td>✓</td><td>5 x 5</td></tr><tr><td>1 CROSS TUBE - W.O.</td><td>510</td><td>83</td><td>✓</td><td></td></tr><tr><td>1 CROSS TUBE - W.O.</td><td>510</td><td>84</td><td>✓</td><td></td></tr><tr><td>1 CROSS TUBE - W.O.</td><td>510</td><td>85</td><td>✓</td><td></td></tr><tr><td>1 CROSS TUBE - W.O.</td><td>508</td><td>73</td><td>✓</td><td></td></tr><tr><td>1 CROSS TUBE - W.O.</td><td>508</td><td>27</td><td>✓</td><td></td></tr><tr><td>1 CROSS TUBE - W.O.</td><td>508</td><td>00</td><td>✓</td><td></td></tr><tr><td>1 CROSS TUBE - W.O.</td><td>508</td><td>26</td><td>✓</td><td></td></tr></thead></table>	ITEM	W.O.	509	508	507	506	505	504	503	502	501	500	499	498	497	496	495	494	493	492	491	490	489	488	487	486	485	484	483	482	481	480	479	478	477	476	475	474	473	472	471	470	469	468	467	466	465	464	463	462	461	460	459	458	457	456	455	454	453	452	451	450	449	448	447	446	445	444	443	442	441	440	439	438	437	436	435	434	433	432	431	430	429	428	427	426	425	424	423	422	421	420	419	418	417	416	415	414	413	412	411	410	409	408	407	406	405	404	403	402	401	400	399	398	397	396	395	394	393	392	391	390	389	388	387	386	385	384	383	382	381	380	379	378	377	376	375	374	373	372	371	370	369	368	367	366	365	364	363	362	361	360	359	358	357	356	355	354	353	352	351	350	349	348	347	346	345	344	343	342	341	340	339	338	337	336	335	334	333	332	331	330	329	328	327	326	325	324	323	322	321	320	319	318	317	316	315	314	313	312	311	310	309	308	307	306	305	304	303	302	301	300	299	298	297	296	295	294	293	292	291	290	289	288	287	286	285	284	283	282	281	280	279	278	277	276	275	274	273	272	271	270	269	268	267	266	265	264	263	262	261	260	259	258	257	256	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	14 PCS STUDS - W.O.	509	33	✓		30 PCS STUDS - W.O.	507	21	✓	24 x 0	12 PCS STUDS - W.O.	509	32	✓		10 PCS RAPPET - W.O.	509	67	✓		10 PCS RAPPET - W.O.	509	68	✓	5 x 5	1 CROSS TUBE - W.O.	510	83	✓		1 CROSS TUBE - W.O.	510	84	✓		1 CROSS TUBE - W.O.	510	85	✓		1 CROSS TUBE - W.O.	508	73	✓		1 CROSS TUBE - W.O.	508	27	✓		1 CROSS TUBE - W.O.	508	00	✓		1 CROSS TUBE - W.O.	508	26	✓		<p>09-07-30</p> <p>To BUFF AND EXAMINE - INDICATION</p> <p>To BUFF AND EXAMINE - INDICATIONS</p> <p>6 ITEMS TO EXAMINE AFTER BUFFING</p> <p>OTHER PCS FOUND ACCEPTABLE TO STANDARD</p>
ITEM	W.O.	509	508	507	506	505	504	503	502	501	500	499	498	497	496	495	494	493	492	491	490	489	488	487	486	485	484	483	482	481	480	479	478	477	476	475	474	473	472	471	470	469	468	467	466	465	464	463	462	461	460	459	458	457	456	455	454	453	452	451	450	449	448	447	446	445	444	443	442	441	440	439	438	437	436	435	434	433	432	431	430	429	428	427	426	425	424	423	422	421	420	419	418	417	416	415	414	413	412	411	410	409	408	407	406	405	404	403	402	401	400	399	398	397	396	395	394	393	392	391	390	389	388	387	386	385	384	383	382	381	380	379	378	377	376	375	374	373	372	371	370	369	368	367	366	365	364	363	362	361	360	359	358	357	356	355	354	353	352	351	350	349	348	347	346	345	344	343	342	341	340	339	338	337	336	335	334	333	332	331	330	329	328	327	326	325	324	323	322	321	320	319	318	317	316	315	314	313	312	311	310	309	308	307	306	305	304	303	302	301	300	299	298	297	296	295	294	293	292	291	290	289	288	287	286	285	284	283	282	281	280	279	278	277	276	275	274	273	272	271	270	269	268	267	266	265	264	263	262	261	260	259	258	257	256	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225	224	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	208	207	206	205	204	203	202	201	200	199	198	197	196	195	194	193	192	191	190	189	188	187	186	185	184	183	182	181	180	179	178	177	176	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161	160	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144	143	142	141	140	139	138	137	136	135	134	133	132	131	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																														
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Scope of Services
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES		DTR # <u>E-20068</u>
CLIENT REPRESENTATIVE <u>CHANTAL LAVOIE</u>	SIGNATURE <u>Chantal Lavoie</u>	
TECHNICIAN (SIGNATURE): <u>Mike Gillis</u>		REPORT REVIEWED BY:
NAME (PRINT): <u>Mike Gillis</u>	1 ST TECHNICIAN	NAME INITIALS
CGSB LEVEL <u>II</u> SNT LEVEL	CGSB LEVEL SNT LEVEL	
CGSB REG. No <u>6066</u>	CGSB REG. No	



LIQUID PENETRANT TEST REPORT

P- 14946

CLIENT DART AEROSPACE DATE Aug 12 2009 PAGE 1 OF 1
ATTENTION LINDA/CHANTEL ACUREN JOB NO. 188-09-001485 TIME AM ☒ PM ☐
ADDRESS 1270 ABERDEEN ST. ON. PO/WO NO. - 10205
KGA 1K7 WORK LOCATION HAWKESBURY - ON.
ACCEPTANCE STD. ASTM 1417 REV./DATE 2007
PROJECT F.P.I. ON MACHINED PARTS AND
ITEM(S) EXAMINED CROSS TUBES
- EXAMINE - W.O. 50721 - ONE STUD, W.O. 50968 - (5) RAPPELS

JOB DESCRIPTION PROCEDURE NO. LT-0002 REV./DATE 1/24/02 TECHNIQUE NO. LT-1002 REV./DATE 1/24/02
PART NO. MATERIAL STAINLESS STEEL THICKNESS As per Acuren
SCOPE WET FLOUORESCENT LIQUID PENETRANT INSPECTION
CARRIED OUT 100% EXTERNAL

TEST DETAILS

METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND	<u>MAGNAFLUX</u>		BLACK LIGHT S/N	<u>16459</u> <input checked="" type="checkbox"/> OUTPUT > 1000 μ W/cm ² <input type="checkbox"/> AMBIENT < 2 fc	
PENETRANT	<u>2LG7</u>	MINIMUM DWELL TIME	<u>450</u>	MIN.	LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE
PENETRANT REMOVER	<u>H2O</u>	MINIMUM DRY TIME	<u>>10</u>	MIN.	OTHER <u>LA910</u>
DEVELOPER	<u>SKD 52</u>	MINIMUM DWELL TIME	<u>10</u>	MIN.	LIGHT METER S/N
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY	CAL DUE DATE <u>DEC 8 - 2009</u>	

TEST SURFACE

SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input checked="" type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input checked="" type="checkbox"/> CLEAN BARE METAL
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/ 20°F	<input type="checkbox"/> -4°C/ 20°F TO 10°C/ 50°F	<input type="checkbox"/> 10°C/ 50°F TO 52°C/ 125°F	<input type="checkbox"/> > 52°C/ 125°F	

RESULTS- (☐ METRIC ☐ IMPERIAL)

ITEM	ACCEPT	REJECT
1 - STUD, W.O. 50721	<input checked="" type="checkbox"/>	
5 - RAPPEL, W.O. 50968	<input checked="" type="checkbox"/>	
1 - CROSS TUBE, W.O. 50801	<input checked="" type="checkbox"/>	
1 - CROSS TUBE, W.O. 50877	<input checked="" type="checkbox"/>	
12 - STUDS, W.O. 50721	<input checked="" type="checkbox"/>	

ITEM WAS BUFFED-AND FOUND ACCEPTABLE
ITEMS WERE BUFFED-AND FOUND ACCEPTABLE
- WORK ORDERS EXAMINED ON THIS REPORT HAVE BEEN FOUND ACCEPTABLE TO SET STANDARD.

MM 09 08 12

Scope of Services
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE	<u>Ron Tiley</u>	DTR # <u>E-20069</u>
TECHNICIAN (SIGNATURE):	<u>Mike Johnston</u>	REPORT REVIEWED BY:
NAME (PRINT):	<u>Mike Johnston</u>	NAME INITIALS
CGSB LEVEL <u>II</u> SNT LEVEL	CGSB LEVEL SNT LEVEL	
CGSB REG. NO. <u>6006</u>	CGSB REG. NO.	